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*The World Oil Market in 1974*

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**THE WORLD OIL MARKET IN 1974****CONCLUSIONS**

The present combination of world oil production and price levels is unsustainable. Either production or prices must fall soon.

Even before the end of the embargo, prices in the world crude oil market were softening. The growth of oil demand has been curbed by several factors:

- the worldwide slowdown in economic growth,
- conservation measures,
- consumer resistance to rising product prices,
- less panic buying as fears of an oil supply crisis subside,
- consumer expectations that prices are more likely to decline than to rise, and
- substitution of other fuels for oil.

While demand has been weakening, world oil production has been rising slowly and stocks of crude and products remain at or above normal commercial requirements in all major countries.

Output is already running ahead of consumption, after adjustment for the normal seasonal stock drawdown. Free World supply now amounts to some 49 million b/d. Demand, which is at its seasonal peak, is about 50 million b/d. Some 2 million b/d of this demand is attributable to the seasonal factor. Seasonally adjusted demand thus amounts to an estimated 48 million b/d, or 1 million b/d less than production.

Market prospects for the rest of the year depend primarily on OPEC production decisions and the extent to which consumption grows in the United States. Demand in Western Europe and Japan is running about 5%

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below the levels that would have been expected before the price increases. This degree of conservation suggests that their oil consumption will be about the same this year as last. No substantial change in consumption is likely in the rest of the Free World, outside the United States, as cutbacks resulting from balance-of-payments constraints in some countries should at least offset increased demand in rapidly growing countries. Total Free World demand, excluding the United States, should therefore remain close to last year's level.

US oil consumption is now running about 15% -- or 3 million b/d -- below earlier expectations. If the United States continued to save at this rate, total Free World demand would be about 48 million b/d in 1974. This is about 1 million b/d less than current Free World oil supply.

Expected increases in Arab production will add 2 million b/d to Free World supply. The impact on the market will depend on the US reaction. The United States may well increase its imports by 1 million b/d this year, leaving a potential surplus of about 2 million b/d.

Given the expected supply and demand conditions, prices should fall sharply by midyear. In the Persian Gulf, the decline should be from the present level of about \$9.50 per barrel to the equity price of about \$7.50. Barring a resurgence in world demand or a cutback in OPEC production, the equity price is unsustainable much beyond midyear.

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THE SETTING

Before the October crisis, demand for oil was overtaking supply largely because of the unprecedented rate of world economic growth. Product prices rose and industry profits increased rapidly. Small, crude-short firms were scrambling for supplies. In August, when equity oil cost the majors \$2.30 a barrel in the Persian Gulf, auction oil went for \$2.90.\* This price trend was reinforced by growing concern over a possible energy crunch. Saudi Arabia was hinting that it, like Libya and Kuwait, might curtail output for conservation purposes. All of these factors contributed to the psychology of scarcity that was so prevalent in the fall.

In mid-October, meeting back-to-back in Kuwait:

- The Arabs announced their decision to cut production over the next several months.
- The Persian Gulf oil producers announced a posted price increase that raised the equity price by 50%, from \$2.40 to \$3.70. Other OPEC members followed with similar increases.

On 23 December, taking advantage of the tight supply conditions that followed the Arabs' production cuts, OPEC again increased posted prices. This upped the Persian Gulf equity price by more than 100%, to \$7.50, effective on 1 January 1974.

In early January, the average price of crude oil began to rise well above the equity price. The increase was partly attributable to panic bidding in the auction oil market, which quickly fell off after the Arabs announced an end to continuing monthly production cuts. More important, the companies raised their prices in anticipation that they would have to pay much more for buyback oil than their equity oil cost them. By late February, the price of Persian Gulf crude was on the order of \$9.50.

The critical issues in the market during the remainder of the year will be:

- Saudi Arabia's price and production decisions.
- The reaction of other producers to Saudi decisions.

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\* For crude oil price definitions, see the Annex.

- The net effect on US demand of relaxed controls, increased availability of oil, and higher prices.



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WORLD OIL SUPPLY

World crude oil production in February was about 56.3 million b/d:

- It exceeded the 1973 average by about 700,000 b/d, or 1%.
- It was some 1.6 million b/d, or 3%, less than the pre-October war level.
- World production had increased from an average of 50.7 million b/d during 1972 to 55.6 million b/d during 1973, or by 9.7%.

Arab production in February was 2.5 million b/d less than in September. Non-Arab producers have been producing at or near capacity and have raised their production by 1 million b/d. Iran (360,000 b/d), the USSR (240,000 b/d), and Nigeria (150,000 b/d) have accounted for most of the increased supply.

While the Arab oil producers partly turned off the spigot, they were increasing its size. Because of continuing expansion programs in Saudi Arabia, Iraq, and Abu Dhabi, capacity on the eve of lifting the embargo was 6 million b/d greater than current output. Thus the Arabs had the capability of increasing production by one-third with existing facilities.

Nearly 3 million b/d of the unused productive capacity is in Saudi Arabia, 1 million in Kuwait, 1 million in Libya, and 600,000 b/d in Abu Dhabi. The extra capacity in Kuwait and Libya is a result of government policies to restrict production for conservation reasons, which antedate the October war and which can be expected to continue.

While most oil-producing countries outside the Arab world are expected to continue taking advantage of the sellers' market by producing at capacity this year, they lack the capability to increase output much. Non-Arab exports are expected to average 15.8 million b/d in 1974, or 700,000 b/d (5%) more than last year.

Iran is likely to raise exports by some 400,000 b/d. Nigeria and Indonesia together will probably add another 300,000 b/d to world oil supplies this year. Venezuelan exports are not expected to change materially.

So far this year, Soviet exports to Western Europe appear to be running near the 1973 level of 800,000 b/d. Moscow values its reputation as a reliable supplier, oil being one of its best hard currency earners. Reports in late 1973 that the Soviets were running behind on deliveries to France and West Germany were overstated.



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**Arab Oil: Productive Capacity**  
**February 1974**

	Thousand b/d	
	Estimated Productive Capacity	Underutilization of Productive Capacity
<b>Total</b>	<b>23,900</b>	<b>6,280</b>
Saudi Arabia <sup>1</sup>	10,600	2,850
Kuwait <sup>1</sup>	3,800	950
Libya	3,000	950
Iraq	2,300	550
Abu Dhabi (UAE)	1,800	550
Algeria	1,100	150
Qatar	700	180
Oman	300	....
Dubai (UAE)	300	100

1. Including approximately one-half of Neutral Zone production.

**Estimated Non-Arab Oil Exports<sup>1</sup>**

	Million b/d	
	1973	1974
<b>Total</b>	<b>15.1</b>	<b>15.8</b>
Iran	5.6	6.0
Venezuela	3.1	3.1
Nigeria	1.9	2.1
Indonesia	1.2	1.3
Canada	1.1	1.0
Communist countries	1.2	1.2
Others	1.0	1.1

1. Excluding trade among Communist countries.

The net result of Soviet and East European oil trade has been to add to non-Communist supply. Their imports from the Middle East and North Africa were some 400,000 b/d less than expected during the first quarter. They have been balking at their suppliers' terms, which include higher than market-level prices, demands for firm contracts, and payment in hard currency. For reasons not entirely clear, suppliers have been tougher with the USSR than other customers.

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Moscow will be back in the market by midyear, however, as prices drop. It probably will not be willing to make up for this oil -- delivered to Eastern Europe on Soviet account -- for more than about six months.

Substitution of other fuels will be possible on a limited scale even during this year. For example, the Netherlands has accelerated conversion from oil to natural gas and will save 290,000 b/d of oil. The worldwide decline in coal output will be arrested and turned around. World coal output will probably be some 70 million tons higher in 1974 than it would have without the oil price increase. The oil equivalent is 1 million b/d. In addition, West Germany in particular has been running down sizable coal stocks. These substitutes have been largely accounted for in the demand analysis of this paper.

Worldwide oil stocks are at relatively high levels as the peak consumption season comes to an end. The second quarter -- normally a trough in oil consumption -- is a period of extensive stock rebuilding. Perhaps as much as 10% of world oil demand during the second quarter is for the purpose of stock building. With stocks at high levels and prices at record highs, normal stock building almost certainly will be slowed this year.

Except in Italy and Belgium, where price ceilings are interfering with crude oil imports, oil supplies in Western Europe generally appear to be ample. Total oil stocks in European OECD countries (measured in days of normal consumption during the preceding year) were only 5% lower on 1 January 1974 than one year earlier, and they were 5% higher than on 1 January 1971. The 82-day average for Western Europe at the beginning of 1974 compares with 45- to 50-day stocks in the United States and Japan. Normal commercial working requirements would call for stocks equaling perhaps 40 days of consumption.

Western Europe's favorable stock position reflects mainly two factors: reduced demand and agreement by EC members last year to increase the legal requirement for stocks from 60 days' average consumption to 90 days by 1975.

#### Oil Stocks in European OECD Countries

	<u>Days of Average Consumption</u>				
	1 Jan 71	1 Oct 72	1 Jan 73	1 Oct 73	1 Jan 74
All countries	78	91	86	91	82
Of which:					
France	104	113	110	111	100
West Germany	66	76	73	79	72
Netherlands	62	N.A.	83	N.A.	62
United Kingdom	85	98	87	90	77
Italy	77	94	88	N.A.	N.A.

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In the United States, mostly as a result of successful demand suppression but also because of uncommonly mild winter weather, stocks are in excellent shape. Gasoline stocks increased by 10% during the past two months and are now somewhat higher than a year ago. Residual fuel oil stocks are about at last year's level, and total distillate stocks are some 30% higher than last year. Crude oil stocks are only 2%-3% less than last year. This would be expected as product imports have held relatively constant since September 1973, whereas crude imports are now off substantially.

All major consuming countries are in a position to delay normal seasonal stock rebuilding in the expectation of crude oil price weakening, particularly with the new increase in Arab output.

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## WORLD OIL DEMAND

Before the energy crisis, world oil consumption was projected to increase by 6% or 7% in 1974. This growth will not occur. The economic downturn in major industrial countries and savings induced by higher oil prices, conservation programs, and mild weather will limit non-Communist oil consumption to about last year's level - 49 million b/d.

Free World Oil Demand  
1974

	Million b/d				
	First Quarter				
	World	United States	Western Europe	Japan	Rest of World
Normal consumption <sup>1</sup>	54.8	20.0	17.8	5.4	11.6
Saving	5.6	3.0	1.8	0.2	0.6
Actual consumption	49.2	17.0	16.0	5.2	11.0
	Complete Year				
Normal consumption <sup>2</sup>	52.2	19.0	16.0	5.6	11.6
Saving	3.6	2.0	0.8	0.2	0.6
Actual consumption	48.6	17.0	15.2	5.4	11.0

1. Not seasonally adjusted. For the United States - FEO's forecast demand.

2. At projected growth rates. For the United States - FEO's forecast demand.

Oil consumption in most developed countries is related closely to industrial production. Industrial growth has slowed considerably during the past six months and is likely to remain depressed through most of 1974. On the basis of past relationships between industrial output and oil demand, we would expect non-Communist oil consumption in 1974 to increase to 52 million b/d. Savings in oil use will reduce this figure by an estimated 3-1/2 million b/d for the year as a whole. During the first quarter, savings should amount to about 10% of normal consumption, or about 6 million b/d. About half of world oil savings have been occurring in the United States, which accounts for only one-third of total oil consumption. Savings will be somewhat smaller during the remainder of the year because weather will be a less important factor.

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### United States

Current US oil consumption is estimated by the FEO at about 17 million b/d. This is nearly 3.0 million b/d -- or 15% -- less than the level of demand projected before the oil crisis. Mild weather, conservation measures, the impact on demand of higher prices, and gasoline queuing account for the bulk of the savings.

US consumption for the year as a whole will depend on several political and economic factors. Before the embargo was removed, FEO estimated that consumption would average about 17 million b/d if demand continued to be suppressed by existing policies. Even though the embargo has ended and greater quantities of crude oil will be available, growth in oil consumption will continue to be retarded by voluntary conservation, slower economic growth, high prices, and substitution of other fuels.

In the first quarter, we have already saved nearly 5% of normal consumption on an annual basis. Moreover, the projected increase in coal output equals some 500,000 b/d, or an additional 3% of normal oil consumption. Price effects and general awareness of waste in industry and by individuals should bring further savings. Demand will be moderated by the continuing rise in product prices as increased quantities of foreign crude and products are brought in. Given these factors, average savings of 2 million b/d and average consumption of 17 million b/d for 1974 as a whole seem to be reasonable estimates.

### Western Europe

The slowdown in economic growth and continuing mild weather are the major factors inhibiting gains in West European oil consumption. Higher oil prices and conservation measures will encourage more efficient oil use, slow the long-term decline in coal production, and spur use of natural gas. As a result, oil consumption in Western Europe in 1974 will amount to an estimated 15.2 million b/d, or somewhat less than in 1973.

Western Europe's oil consumption in the first quarter probably has averaged about 16 million b/d, reflecting seasonal demand for heating oil. This is about 10% below consumption in the first quarter of 1973, indicating a saving of about 1.8 million b/d. The most important factor probably has been the abnormally warm winter. In France, for example, warm weather has accounted for the bulk of the nearly 20% drop in heating oil demand so far this year. European gasoline demand in February was down about 3% because of conservation measures and higher prices.

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During the past six years, West European industrial output and energy consumption each have grown at an average rate of 6-1/2%. Because of the shift away from coal, oil consumption grew about 9% annually. Oil consumption in Western Europe is not expected to increase in 1974, in large part because industrial output promises to stagnate. Because of the growth anticipated in other economic sectors, we ordinarily would expect energy consumption to rise about 3% and oil demand about 4%. This increase for oil will probably be offset by conservation measures, mild weather, and sharply higher prices, particularly for industrial fuels.

Higher oil prices should stem and may halt the long-term decline in Western Europe's coal industry this year, but output probably cannot be increased appreciably. Some scheduled mine closings probably will be delayed, and various efforts will be made to substitute coal for oil.

A rapid rise in natural gas consumption also should hold down oil needs. Increased use of natural gas will be facilitated by expanded production capabilities in the Netherlands and the North Sea and by an extensive Dutch program to convert from oil to gas.

## Japan

Japanese petroleum consumption probably will not rise this year primarily because of the sharp downturn in industrial growth. In addition, conservation measures and substantial price increases are encouraging more efficient use of oil and discouraging continued substitution of oil for coal. Although oil savings in 1974 should be adequate to hold consumption near the 1973 level, imports will increase if stock rebuilding continues.

Japan's current oil consumption is about 5.2 million b/d. Imports are running higher than that because stocks are being restored to pre-crisis standards. In the absence of conservation measures and good weather, oil consumption would probably have risen to about 5.4 million b/d. Savings thus amount to about 200,000 b/d -- 4% of normal consumption.

Industry accounts for much of the growth in Japanese oil demand. Our analysis shows that on the average a 1% change in industrial output during 1969-73 was accompanied by a 1.2% change in oil consumption. In the first quarter of 1974, Japanese industrial production should grow 7% compared with the same quarter last year. Oil consumption would consequently be expected to increase about 8%. Recent Japanese estimates, however, indicate that conservation measures have restrained consumption growth to about 3%.

Japan's oil consumption will probably slip somewhat in the second quarter because of seasonal factors, but for the year as a whole it probably

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will average around 5.4 million b/d, the same as last year. In the absence of Tokyo's mandatory conservation program and sharp price hikes, the expected 5% gain in industrial output this year would have been expected to raise oil consumption to 5.6 million b/d.

Mandatory conservation measures are likely to be abandoned by midyear, but higher prices will continue to constrain consumption. The government recently allowed a 65% increase in wholesale prices of products, frozen since early December. Such a large increase will stimulate conservation by industry, which uses 70% of total oil supplies. Other economic sectors will follow suit.

Higher oil prices also will encourage substitution of coal for oil. Part of the increase in oil consumption over the past several years resulted from a shift away from coal. Now the Japanese are planning to reverse the downward trend in coal production and raise coal imports.

#### Rest of World

Oil consumption in the rest of the non-Communist world is likely to increase only slightly from the 11 million b/d of 1973. Demand in the less developed countries will remain at about the pre-crisis level of 8 million b/d because of sharply higher prices and slower economic growth. Demand in other countries probably will be up a little.

Total consumption in the three most important oil-importing LDCs -- Brazil, India, and South Korea -- is expected to remain essentially unchanged. These countries account for one-third of LDC oil imports. India, whose consumption has increased at an average annual rate of about 9% in recent years, is expected to consume about the same amount as in 1973. Industry, which accounts for most of India's 500,000 b/d consumption, is stagnating, and foreign exchange constraints will limit consumption growth in other sectors. South Korea probably will increase consumption only 5% -- about 15,000 b/d -- this year. Consumption in Brazil is expected to increase by roughly 10%, or 75,000 b/d.

Other major consumers -- including Canada, Australia, and South Africa -- will increase consumption somewhat. In Canada, consumption increased by 5% in 1973 and is expected to increase by the same percentage in 1974. Crude oil imports will remain at about the 1973 level because Canada will cover its added needs by reducing exports to the United States. Oil consumption in Australia is expected to continue to increase about 8% yearly, with practically all the increase being covered by domestic output. No major changes in South African import or consumption levels are expected. None of these three consuming countries has implemented serious conservation measures, but higher prices will result in some savings.

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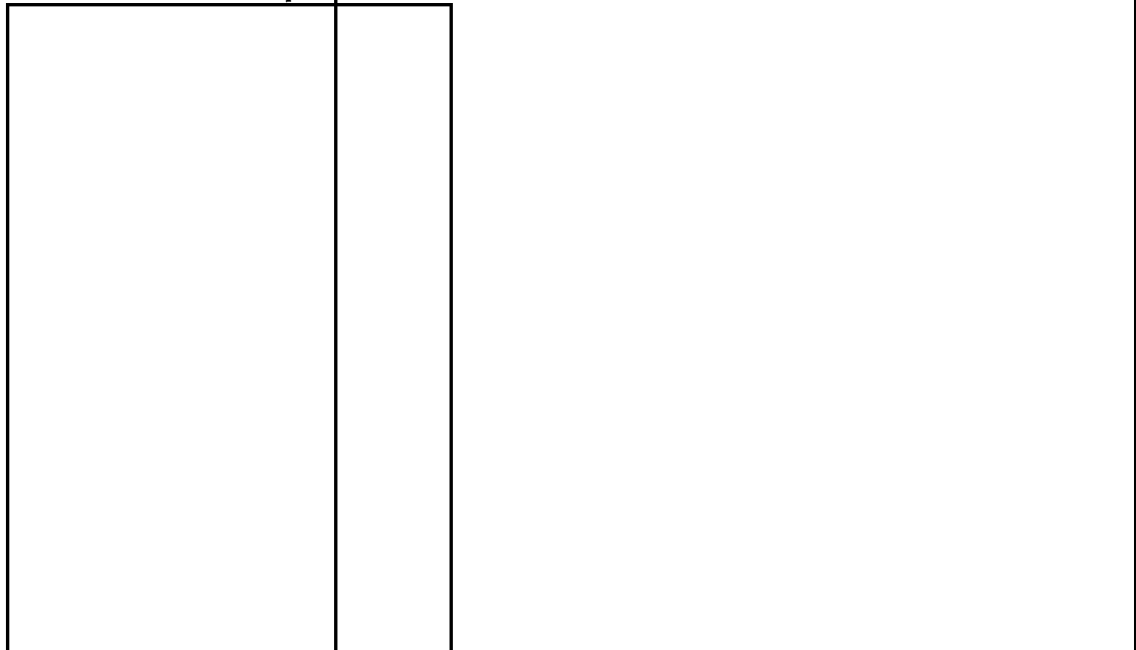
## PRICE TRENDS

Even before the recent increase in the oil supply following the end of the embargo, reduced demand and increasing supply were reflected in eroding prices. With increasing Arab output, which we expect will add about 2 million b/d to world supply, and with demand not expected to increase much, we believe that the market will continue to soften, perhaps dramatically. As a result of factors now in train, world oil supply this year will average about 50 million b/d and demand about 48 million b/d. With an underlying surplus of this magnitude, either prices will have to break or output will have to decline.

As a result of new Arab production, the prices of spot, auction, and buyback oil will be pushed close to that of equity oil. The average price of Persian Gulf oil – now estimated at about \$9.50 a barrel – would fall to about \$7.50 a barrel. This would mean that most participation oil was being sold back to the companies and the buyback price had fallen to the general level of the equity price.

Paradoxically, a decline in world crude oil prices will not ease price pressures in the United States, at least in the short run. More high-priced foreign crude will be imported into the United States, thus raising the average price of US crude supplies. The price of domestically produced crude now averages about \$6.80 – well below the price of imports from any source even before transportation costs are included.

As prices erode, strong pressures will be generated among the OPEC countries to cut output.



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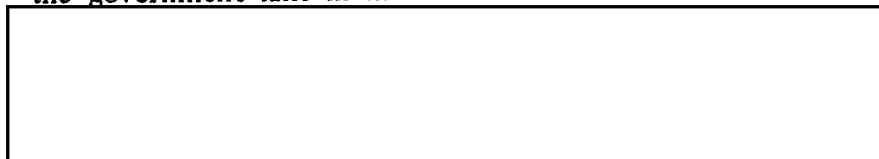


## APPENDIX

### CRUDE OIL PRICE DEFINITIONS

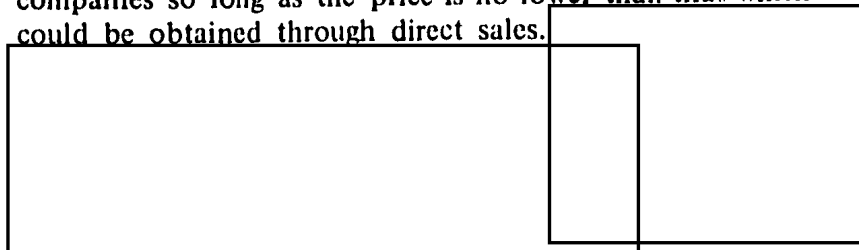
Crude oil is sold at four different types of prices: (1) the equity-oil price; (2) the buyback price, (3) the auction/bilateral price; and (4) the spot price. In addition, there is a posted or tax reference price, which is used in the calculation of tax and royalty payments to the producer governments. It is only by coincidence that oil is actually sold at this price.

- The equity-oil price is based on the companies' tax and royalty payments to the producer governments. Currently, the government take in the Persian Gulf is \$7.00 a barrel.



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- The buyback price is a negotiated price at which companies buy back participation oil -- that is, oil owned by governments as a result of their equity shares. Some 20% of OPEC production is sold at this price. The buyback price falls somewhere between the equity-oil price and the posted price. It pays the governments to sell this oil to the companies so long as the price is no lower than that which could be obtained through direct sales.



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- The auction/bilateral price is the price governments obtain for their royalty oil and that portion of their participation oil that they do not sell back to the companies. Royalties generally equal 12-1/2% of production and are credited to the companies at posted prices. The governments have the option to take either the oil or the cash payments and, until recently, have always opted for cash payments. If they choose the oil, they obviously must sell it at or above the posted price. Such royalty oil and the portion of their participation oil not sold back to the companies are either auctioned to the highest bidder or sold under bilateral agreements. Between 10% and 15% of OPEC production is in the auction/bilateral price category.

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- The spot price is the market price for the very small quantities of oil sold on the open market by either companies or governments. Less than 1% of OPEC production probably is sold on the spot market.

Only a few years ago, almost all of the oil in international trade was equity oil. A small amount was sold on the spot market, and a few nations, such as Algeria, had nationalized oil that they sold or bartered. After the participation agreements were established in 1973, several producing countries took title to 25% of production. Iran, however, took 100% and Nigeria took 35%. All of these countries chose to sell almost all of their equity oil back to the companies. It is only during the past six months that the governments have elected to market a large part of their oil to third parties. Even now, the bulk of participation oil still falls in the buyback category. It seems inevitable that most of the major producing countries will up their equity shares to 60% or more, but a large part of this oil will be sold back to the companies.

The equity-oil price of a typical barrel of Persian Gulf crude has soared from \$2.11 in January of 1973 to \$7.50 at present. The startlingly high prices have been those bid for auction and spot oil. These reached a peak of \$22.60 in the Nigerian auctions of December 1973. Most of the Nigerian bids were never finalized, and, since that time, auction prices have fallen to the \$10 range. The fall in auction prices puts pressure on the buyback prices that are currently being negotiated.